

## Water Conductivity

**Topic:** Water

**Objectives:** Determine the electrical conductivity of a water sample

**Grade Level:** 5 - 12

**Time:** 5 - 10 minutes

**Materials:** conductivity meter, distilled water, squeeze bottle, beaker, writing pads, pens or pencils

Vocabulary:  
conductivity  
dissolve  
concentration  
impurity

**Location:** Lake Clara Meer, Clear Creek

**Background:** Many solids dissolve in water. It is possible to determine the concentration of total dissolved solids in water by measuring its electrical conductivity. The more impurities or total dissolved solids in the water, the greater its electrical conductivity. In this activity you will use a conductivity meter to determine the concentration of total dissolved solids in Lake Clara Meer or Clear Creek.

**Advance Preparation:** Calibrate the conductivity meter. Fill the small squeeze bottle with distilled water.

**Procedure:**

1. Turn the conductivity meter on and rinse the electrode with distilled water from the squeeze bottle.
2. Fill the beaker with a sample of the water to be tested.
3. Immerse the electrode in the water sample. Wait for the display value to stabilize. Record the display value. This is the measure of electrical conductivity.
4. Repeat this procedure or have another student repeat it. If they differ by more than 50 units on the display, try the experiment a third time.
5. To convert the measure of electrical conductivity to the concentration of total dissolved solids, multiply the conductivity (display) value by 0.67. [Note: Although the conversion factor differs depending on the type of dissolved solid present in the water, 0.67 is commonly used when the type of dissolved solid is not determined.]
6. Record the measure of total dissolved solids.

**Questions to think about and discuss:**Conductivity Chart

<b>Total Dissolved Oxygen (parts impurity per million)</b>	<b>Electrical conductivity (microSiemens/cm)</b>	<b>Recommended for</b>
3 - 20	5 - 30	Pure Water
Below 500	Below 750	Household use
Below 1200	Below 1800	Agricultural use

1. How does the conductivity of your water sample compare to the descriptions on the conductivity chart?
2. Conductivity measurements are affected by water temperature. How do you suppose the conductivity reading might change if the water temperature was hotter or colder than it is today?
3. What do you think would happen to the conductivity measurement after a heavy rain? Why?
4. Look around the lake. What factors do you see that might influence the conductivity measurement in Lake Clara Meer or Clear Creek?